

Name(s) of Risk Team Members: A. Etkin, Andreas Warkentien			Point Value → Parameter ↓		1		2		3		4		5		
Area/Facility Description Title: Collider-Accelerator Department Area/Facility # (if applicable): Area-Wide FRA 9-05			Occupancy or Use		≤once/year		≤once/month		≤once/week		≤once/shift		>once/shift		
Area/Facility Description: Area-Wide Helium Reliquifier			Severity		First Aid Only		Medical Treatment		Lost Time		Partial Disability		Death or Permanent Disability		
			Likelihood		Extremely Unlikely		Unlikely		Possible		Probable		Multiple		
Approved by: <i>E. Lessard</i> Date: 3-31-2005 Rev.#: 0									Comments:						
					Reason for Revision (if applicable):										
					Before Additional Controls								After Additional Controls		
Physical Item or Activity	Hazard(s)	Control(s)	Occupancy A	Severity B	Likelihood C	Risk* AxBxC	Control(s) Added to Reduce Risk	Occupancy A	Severity B	Likelihood C	Risk* AxBxC	% Risk Reduction			
Cryogenic systems	Oxygen deficiency	ODH analysis, ODH exhaust fans, training, remote/local audible/visible alarms, Fire/Rescue group response, EMTs, Cryo-systems designed to consensus codes, procedures, work planning, LOTO, inspections, PPE as required, postings and labeling, Cryogenics Safety Committee/ASSRC reviews	2	5	2	20									
Pressurized Systems	Being struck by an object, such as flying debris from a release of pressurized gas	Postings, PPE, maintenance, training, work planning, Cryogenic Safety Committee /ASSRC reviews, procedures, interlock systems, Certification/testing of pressure related equipment, Tier 1 inspections, LOTO, C-AD Chief ME reviews, codes and standards usage	2	3	3	18									
Vacuum	Ear damage from vessel rupture	Postings, PPE, maintenance, training, work planning, ASSRC reviews, procedures, Tier 1 inspections, Chief ME reviews, vacuum windows covered during handling, use of industry standards, design reviews	2	3	3	18									
Vacuum	Being struck by an object, such as flying debris	Postings, PPE, maintenance, training, work planning, ASSRC reviews, procedures, Tier 1 inspections, Chief ME reviews, vacuum windows covered during handling, use of industry standards, design reviews	2	3	3	18									

Electrical (< 600 VAC)	Shock or electrocution from exposed wiring; overheated wiring if not properly installed, overused or in disrepair; improper grounding, arc blast, burn	All equipment is listed or reviewed by CEE, Tier 1 inspections, disconnected cable policy, installations comply with applicable codes, procedures, training, distribution drawings, LOTO, Kirk keys, energized electrical work permits, ASSRC/ESRC reviews, qualified electricians and technicians, cabinet interlocks, postings, locked areas, guarding, work planning, GFCI, grounding standards, emergency procedures, two-person rule for energized electrical work.	4	5	2	40	C-AD management has implemented requirements and mechanisms to meet PPE requirements identified in NFPA 70E as of December 22, 2004. Implementation of a plan to meet OSHA's NRTL requirements begins June 1, 2005.	4	5	1	20	50%
Working at heights	Falls to lower level, such as falling from a ladder or over a railing	Postings, barriers, fall protection, maintenance, training, work planning, procedures, Tier 1 inspections, PPE, approved scaffolding and platforms, approved ladders, anti-slip surfaces	3	5	3	45						
Further Description of Controls Added to Reduce Risk:												
*Risk:	0 to 20	21 to 40	41-60		61 to 80		81 or greater					
	Negligible	Acceptable	Moderate		Substantial		Intolerable					